

September 7, 1959

SPECIAL REPORT:

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Astronautical
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Aviation Week

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Because of its function—operation of a primary flight control on Boeing's 707 — this Airborne KOTORAC large special actuator must provide the instant reliability under almost continuous off-on-on/off type operation. And its response must be quick, even though maximum torque and acceleration are limited by specification — to avoid inadvertent structural overloads.

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AVIATION CALENDAR

(Continued from page 3)

Professional Group on Space Electronics & Telemetry

Sept. 30-Oct. 3-17th Annual Meeting, Research Triangle Airport, "Managing the Washington Data Base," Durham, N. C.
Oct. 13-17th Annual Conference, Hotel Northgate, Portland, Oregon, Hotel McMenamins Hotel, Portland, Ore.

Oct. 17-20th Annual Angle Americae Airlines Conference, Institute of the Air, Hotel Stevens, 33rd Street, New York City.
Oct. 17-19th Annual Convocation, Langham Hotel, Union Square, N. Y.
Institute Series of Robin Everett Professional Group on Communications Services

Oct. 19-National Aerospace Meeting, Society of Automotive Engineers, Inc., Hotel Roosevelt, Los Angeles, Calif.
Oct. 26-12th Annual Airport Development & Operations Conference, Hotel Diana, 20th Street, N. Y. Sponsored by State of Aviation, New York State Department of Commerce

Oct. 26-17th Annual Meeting, National Business Aircraft Association, Hotel Louisville, Louisville, Ky.
Oct. 26-28th Interference Reduction and Electromagnetic Compatibility Conference, Museum of Science and Industry, Chicago, Ill. Conducted by Airborne Research Foundation in cooperation with Institute of Radio Engineers Professional Group on Radio Frequency Interference (Class full session on Oct. 28)

Oct. 26-National Airports Conference, Veterans, Ohio, Sponsored American Assn. of Airport Executives and the University of Oklahoma, in cooperation with FAA Oct. 26-28th Annual Civil Control Movement Symposium, Oklahoma City Air Materiel Area, Tinker AFB, Okla. (class full Oct. 26)

Oct. 6-8-International Symposium on High Temperature Technology, Airborne Controls, Canada, Montreal, Pava and Gold Space-Stanford Research Institute

Oct. 7-8-Special Advanced Propulsion Systems Symposium, New England Mutual Hall, Boston, Mass. Sponsored by TORA Office of Scientific Research, Army Materiel Research Laboratory, Watertown, Mass.

Oct. 7-9th Annual National Symposium on Vibration Technology, Americana Victorian Society, Shattock Hotel, Philadelphia, Pa.

Oct. 7-9th Annual Airline National Meeting, Air Traffic Control Area, Edgewood, Md. (class full Oct. 8)

Oct. 8-9th Symposium on Environmental Test Pilots' Symposium on Pilot's Role in Space Exploration, Rovello Bldg Hotel, Beverly Hills, Calif. Third Annual Awards Banquet, Oct. 9

Oct. 13-14-15th National Electronics Components and Materials Show, San Francisco, Calif.

Oct. 12-14-15th Annual General Meeting of the International Air Transport Ass., Imperial Hotel, Tokyo, Japan

Oct. 12-16-NASA's 1969 Inspection and Research Center, Hampton, Va.

Oct. 14-15-Walters' Tel. 37th Annual World Wide Interceptor Weapons Meet, Tachikawa AFB, Tachikawa City, Fla. Host Air Defense Command



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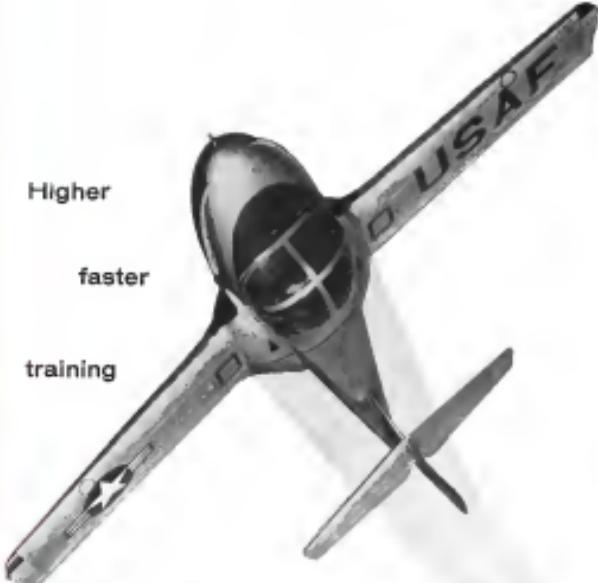


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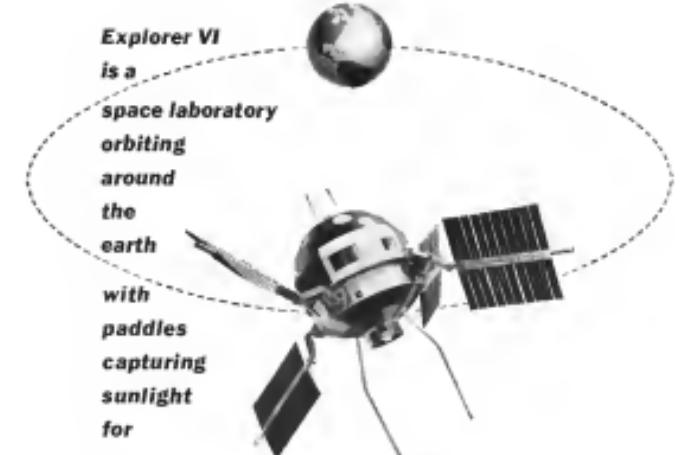
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The attempt to ban publication of the book, "Design for Survival" by Gen. Thomas S. Power, chief of Strategic Air Command, adds another chapter to the already infamous record of censorship imposed by politically appointed civilians in the Defense Department.

This censorship campaign of manipulation of military news to present a consistently distorted and overly optimistic view of the defense posture to the American public is directed by the Department's office of public information headed by Major General M. S. Snyder. His activities range from the ridiculous as reported in our dissertation on "More Sunshine" (AW, July 13, p. 21), to really serious matters such as the suppression of Gen. Power's book. While the agency has been given over one of India's most illustrious space research laboratories to illustrate the terrible ignorance that surrounds some of these alleged security regulations, the case of Gen. Power's book reveals how these security policies are employed to relentlessly suppress any opinions that might conflict with the present program of drastically weakening our defense forces for purely budgetary considerations.

It also puts a public spotlight of publicity on the vague, shadowy and ambiguous methods of these censors who even extend the cloak of administrative secrecy to themselves in an attempt to conceal their activities from public scrutiny. Rep. Moss (D-Calif.) and the congressional subcommittee as keepers of information certainly have ample reason to make formal investigation of this case. We await with interest the reply from the Secretary of Defense to the questions raised by Rep. Moss (see p. 34).

The suppression of Gen. Power's book provides a typical case history of how this censoring process now works in the Pentagon. Before writing the book, Gen. Power obtained permission to do so from James Doolittle, Secretary of the Air Force, and had the manuscript cleared for military security by Air Force headquarters. The book manuscript was officially transmitted to Major General Snyder's office April 12, 1959, but, as of this writing, neither Gen. Power nor the Air Force officials who submitted the manuscript through regular channels to the Defense Department have received any official notice of Snyder's refusal to allow the book to be published.

The only communication on the subject emanating from Snyder's shop has been an informal announcement in response to published rumors of the suppression that "Approved to publish at this time was denied as the grounds that it was inappropriate for a commander of a major command to author a book concerning his area of responsibility while on active duty in that command."

The dimensions of this evasion can quickly be revealed by a list compiled from official Defense Department sources by Sen. Stuart Symington (D-Mo.) of more than 15 general officers who have recently written and published

books on their areas of military responsibility while on active duty. This list includes President Eisenhower, who published his "Crusade in Europe" while an active duty as the Army's Chief of Staff and who, according to his own figures, profited by over \$100,000 through a special tax rating on his book. In contrast, Gen. Power has proposed that all royalties from his book be devoted to military charities.

Just a few weeks ago, the Defense Department concurred in NASA's decision to allow the seven astronauts (all military officers) to sell their space flight stories exclusively to Life magazine for a sum reported in excess of \$500,000. Similarly, the Navy permitted the crew members of the *Nautilus* submarine to write his book in book form while still retaining that revenue.

A second point in the Snyder statement is that Gen. Power's book is reported by those who have reviewed the manuscript, a not a book exclusively about Strategic Air Command but rather a much broader discussion of this country's military problems in the future. Few people, military or civilian, in the country are better qualified than Gen. Power to discuss this subject. He has served in strategic airpower as combat and has been one of the principal architects of the strategic deterrent force that forms the backbone of U.S. military policy. He has commanded the vast USAF research and development programs on the key areas when ballistic missiles appeared on the horizon and today holds the most critical and responsible combat command job in the entire Defense Department.

The real reason Gen. Power's book is being suppressed by the civilian leaders of the Defense Department is that they feel its impact as the program of drastic cuts in U.S. military strength they are planning will soon become necessary. These cuts are being sold on fiscal considerations and will take U.S. military power to the bone in a manner not seen in the Pentagon since the signing of Leon Johnson as Defense Secretary. These cuts and stretches will affect the Atlas ICBM, the B-52, Mack 2 bomber, the B-70 and F-108 Mack 3 generation of aircraft, the hypersonic Dyna-Soar program and even the B-52 and KC-135 production programs.

While these cuts are being plotted in the Pentagon, their advocates are afraid to allow the American public to read the thoughts of the man who is charged with maintaining the strategic deterrent force that they rely on to preserve the peace.

We urge the American people through their press and Congress to lend every effort to smash this medieval cloak of censorship that now bars Gen. Power's book and to demand access to his thoughts on an effective design for our country's survival. Whether the American people agree with Gen. Power's ideas or not, it is part of their birthright as citizens of a reputable founded on the principles of democracy to have access to them.

—Robert Hotz



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Mr. Edward J. Stavid, President of Stavid. During the early years of PENSACOLA in 1942, with Alexander Stepanoff, he was a member of the original research group of the Bell Telephone Laboratories. New York, New York.

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Washington Roundup

USAF Missile Management

Members of Congress are predicting that General Accounting Office's coming report on Air Force management of its missile missile programs will reveal wide spread cases of mismanagement and overcharge to the government. The report is scheduled to submission to Congress when the new session resumes in January. GAO will include the investigation in its USAF division to be in the fall report of its investigation into the USAF, under General AFM, Vol. 1, p. 70.

House Government Operations Committee convened a special last week.

"Judging from the rather discouraging reports of excess procurement costs by the government on contracts in less urgent military programs, the ballistic missile arm is reasonably well on its way to costs of this kind. When ranges are great, costs are of lesser concern."

New ARPA Projects

House Government Operations Committee disclosed last week that these new projects have been assigned to Advanced Research Projects Agency.

• **Trile**, a continuing family of advanced military space vehicles capable of carrying designated military space systems including guidance, stabilization and control subsystems.

• **Spacelab**, a space platform to provide an orbital base for advanced space research.

• **Principle**, involving solid propellants with higher specific impulses than now available.

• **Prudhoe**, a major improvement in structural and power conversion materials to satisfy certain missile and other programs.

• **Longshot**, continuous studies and systems analyses in the space rocket and missile fields to provide the basis for recommendations on projects to satisfy future missile requirements.

ANST Joins FAA

Top post in the Federal Aviation Agency's Bureau of Research and Development was filled last week with the appointment of Daniel E. Anst, former chief test director of the Research Management Board. This board was the predecessor to the Research Bureau of the Federal and Office of Public Affairs as the major division in the agency's organizational structure set to be folded. Inferences are now strong that the latter position will go to Jack Gertz, present assistant with the Military R&D Board, the public affairs office here.

Anst left the Air Force Materiel Board last year to join Lear, Inc. He later was named president a position he held for a brief time prior to his return to government service.

Delta Pilot Protest Rejected

Reluctance to become involved in labor-management disputes was a major reason cited by the Civil Aeronautics Board in rejecting the protest of a group of Delta Air Lines pilots against the terminal rating used when the airline merged with Eastern and New York Air Lines in 1971. The pilots that the petitioners had asked to change rules Delta or the Air Line Pilot Association had chapter with acting as bad faith in drawing up the

agreement, but which has been in effect for nearly two years, the Board said it denied the petition for lack of evidence. CAA and its air carriers followed the policy of respecting the remaining contracts in an attempt to carry out voluntary integration in an equitable manner.

Translation Research

Contract research work on high speed electronic conversion for translation of foreign language text while in flight was urged in a House Science and Astronautics Committee report. The report said it is doubtful that fully automatic, high quality machine translators can be obtained, but the machines can certainly be used in the future to reduce the human workload greatly.

Equal Wage Bid Lost

Aircraft industry has an important hand in its campaign to equalize aviation industry. Walsh Heffer, chairman wages with its own Walsh Heffer Airline Employees Labor Department to wages an industry to determine the prevailing minimum wage, and that prevailing wage is used as the minimum in government contracts. Aircraft industry wanted aircraft and missile electronics companies included in the aircraft classification so they would have to pay the same minimum wage arguing that it is easier to allow the electronics firms to compete with a lower minimum wage. Labor Department refused to include them.

Some new companies may be included in the annual industry averages under a new study Labor Department will conduct to determine whether the present definition should be expanded to include certain phases of missile production. These phases include more complex payload systems and assembly and structure, but not electronic parts of electronic equipment for aircraft and missiles are specifically excluded. Labor Department and data compiled in the Defense Department on wage cost patterns making electronic gear for aircraft leads to the conclusion that they should be included from the series of aircraft and missile plants.

Some changes in the Walsh Heffer minimum wage guidelines are expected to be made again in the fall from a series of the electronics again the Labor Department will conduct later. This series, which will include manufacturers of aircraft and missile electronic equipment, will determine whether a new minimum should be set for the industry.

New Express Pact

Agreement on a new contract between the scheduled airlines and Federal Express Agency, covering air express activities was expected by the end of last week. The new contract, which will replace a contract that expired July 31, will run for five years and will establish a regular working partnership between the airlines and the agency. For the first time, in the past, the agency has conducted its pack and delivery service on a cost plus basis. Under the terms of the new contract, the two groups will share an average 40% division of expenses. In addition, a joint committee, composed of airline and agency representatives, will be organized to resolve all operating problems, including air crew scheduling and fuel-pooling needs.

—Washington staff

last January and next therefore have been considerably higher statistically after the bandits acts. Third Soviet delegate was Prof. Real Dognadashvili, astronomer, of Tbilisi.

Soviet was asked about another newspaper statement attributed to the delegates to the effect that Russia might try to put a man in orbit within two years.

"The construction rate is in the form of a joke and the correspondent took it as a 'joke,'" Sels said.

He also said Russia has not yet tried to construct a nuclear reactor. "The U.S. observes that the Soviet Union has had Mix-1 and last month there appeared to be a nuclear reactor in the Soviet Union," he said. "Russia has had the last of four reactors in an accident." (AW June 22, p. 79).

Pioneer IV Comment

Sels said it now has personal opinion that the U.S. solar satellite Pioneer IV was a great achievement, both in satellite and in research, but he refused to compare U.S. and Soviet nuclear on the grounds that they were beyond the limits of a technical discussion. Asked if the West could expect details of Soviet satellite construction when the U.S. has provided launch services, Sels said: "Some details are always published, although with circumstances of satellite launching."

Soviet space flight goals include "one Soviet space flight in the interest of man on the moon and interplanetary flights," he said. He refused to give timetable suggesting that the delegates "read the paper." Asked when announcement of another achievement could be expected, he said "tomorrow."

Prof. S. Tsai, Singer of the University of Maryland, who last year came upon a previously unknown Soviet space station, also in the Soviet belt (AW Sept. 1, 1968, p. 21), this can remain his field. "Now he wants to create an artificial belt of radiation for study of the earth's atmosphere."

Electron Accelerator

Soviet suggested using a satellite or rocket to carry a 500-kilowatt electron accelerator as an orbital satellite between 600 and 1,000 m over the equator. The accelerator would be capable for about 100 sec. and would inject a stream of electrons of about 200 kev. The electron volts (mev) energy into the upper atmosphere. The satellite would develop rapidly and tend to slow rapidly as the earth's magnetic field. Letters would occur periodically through collisions with the very ionized atmosphere.

Spreading rockets could be used to track the increasing number of electrons on a daily basis, and the data from the flights would produce an

Soviet Space Safety

London-Moscow propaganda effort of uproot that Soviet Russia are the greater risk is raised space flight because it has less agreed for humans. Mr. the Western world apparently is causing great concern in Soviet space scientists.

A three-year adoption to the 19th International Astronautical Congress has last week explained the importance of "safe space flight" and safe recovery and not in a more positive to be solved before a man is put into orbit.

Recent visitors to the Soviet Union have left with more questions than they have brought, brought up the subject of safety. themselves are apparently trying to master the question that first space flights will have greater risks than U.S. space flights.

The emphasis on safety has led most U.S. observers to conclude that Russia will not attempt to put a man into orbit until it has made a technical capsule, so that even if one pilot should die, it can be pointed out that every precaution was taken, even to sending a companion with his safety purpose. Soviet space scientists in letters to the Western media, however, know to have the human factor to know a two-man capsule, not estimate in that the two men flight might take place sometime in summer.

electrons density profile. This could be related to atmospheric density at the altitude of the belt.

Spacecraft thermal power has been substantiated in available data, Singer added, and the thermal is still running on. Data on thermal insulation of space vehicles at high temperatures is the Soviet Union. Also, heat-particles with energies as high as 100 kev, can be as the order of one particle in 10 million other constituents. Space travelers would have to wear the belt for about one hour to feel the maximum penetrative result, depending on weight and under driving in a satellite, they would be exposed to the time.

From Soviet scientists—Prof. Kusnezov, Prof. I. S. Shchelkun, Dr. G. I. Galperin and Dr. I. M. Svetlichny—presented some data on the reactor at 100,000 watts and specifically on the needs for thermal insulation of the reactor. Soviet's penetrate report.

For the first time they had, will electrons of 10 kev energy had been discovered in the upper atmosphere by Spanish III. Soft electrons were found at altitudes between 200 and 1,367 m with maximum intensity at about 800 m above the geomagnetic equator.

Milton W. Rosen and F. C.

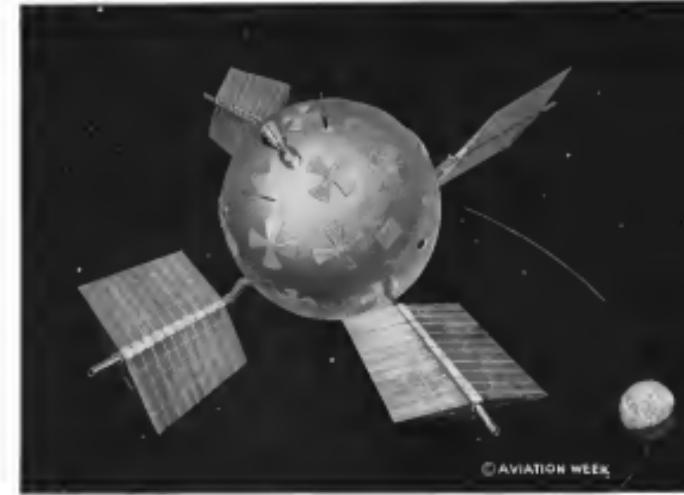
Silousov, of National Aeronautics and Space Administration, presented a discussion of the NASA's Nova space vehicle which had a configuration slightly different than that shown in present Soviet conception but did not differ from previous discussions in overall concept as in the key design factor that the vehicle depends on the 3.5-ton-ton to single chamber. Rocket-boosted liquid oxygen and nitrogen for the vehicle. (AW June 1, p. 30).

The vehicle would have a nose cone which would be 210 ft long, have a total height of more than 6 and 10 ft in the fairing, and would return a weight of 9,000 to 9,000 lb from the nose cone using five stages.

A less cost, three-stage solid propellant space vehicle called Entra was proposed by H. L. Thaddeus, Jr., former vice president of Grand Central Rocket Co. He said it would need 90 lb. in the nose cone in place of 750 lb. payload plus a 300 lb. nose cone at a cost of considerably less than the \$700,000 figure for the Soviet's 100-ton Nova. Entra would weigh only 10,000 lb. and stand 17.5 ft. High-Two-stage Entra could put 10 lb. in a 300-lb. payload on board five pounds to escape velocity. Used as an orbital satellite reentry, Entra could put 430 lb. into a 300-km orbit, he said.

Electron density profile. This could be related to atmospheric density at the altitude of the belt.

Spacecraft thermal power has been substantiated in available data, Singer added, and the thermal is still running on. Data on thermal insulation of space vehicles at high temperatures is the Soviet Union. Also, heat-particles with energies as high as 100 kev, can be as the order of one particle in 10 million other constituents. Space travelers would have to wear the belt for about one hour to feel the maximum penetrative result, depending on weight and under driving in a satellite, they would be exposed to the time.



© AVIATION WEEK

ARTIST'S SKETCH shows how large satellite will have "propeller blades" now reported on its sides to control lateral heat.

Space Technology

'Propeller Blades' Control Able IV Heat

Satellite to be put into orbit around the moon by Atlas Able IV space vehicle scheduled for an Oct. 1 lifting from Cape Canaveral, Fla., will include a new, heat-shielding "propeller" device on the sides of the satellite to shield propeller blades from the intense heat of the sun's rays during the orbital maneuver.

The satellite will use the propeller blades extending out from the sides of the satellite to shield heat from the sun. When temperatures within the satellite fall below a preset safe level, a cool-down coil contracts, causing the propeller blades to rotate, uncovering the black heat-shielding paint to expose the temperature control the sphere.

With this required upper limit temperature is attained, expansion of the coil contract will rotate the heat-shielding propeller blades to cover the heat-shielding black paint.

The same propeller blade scheme in temperature control system is being checked out in Thor Able III (Ex place B) satellite orbiting the earth in a long elliptical path.

This same propeller blade scheme in temperature control system is being checked out in Thor Able III (Ex place B) satellite orbiting the earth in a long elliptical path.

Large, padded-wheel, refrigerators extend out on arms from the satellite and similar to those used on Skylab VI satellite.

On April 18, spring-loaded to extend out before third-stage ignition, each system has a capacity of 2,000 kilowatt hours cells to take in energy from a sunlight and charge batteries for the satellite's systems.

Booster Vehicle

Boost vehicle for Able Able IV will be the Air Force Convair Atlas intercontinental ballistic missile, coupled to upper stages as used for Thor Able III. Able Able IV originally was intended to put a satellite in orbit around the planet Venus (AW June 22, p. 26), but was redesigned as a lunar orbit vehicle.

Project is part of National Aeronautics and Space Administration's space program, with Space Technology Lab causing designing and assembling the existing probe.

Pressure Rising for Service Unification

By Fred Estes

Washington—Demands for unification of the military services and reorganization of the Defense Department for new polls last week as new bills in both the House and Senate began important action to end what are called the "perpetual wars."

Current opposition of the defense and space efforts drew sharp congressional criticism, and committee proposals for reshaping and streamlining these efforts will result in both House Committee and proposals included.

• **House Committee** Operation Committee urged President Eisenhower to re-structure studies leading to an Air Force merger. In addition to a unified effort in the development, one structure and deployment of land-based missiles, the committee and the merger also should call later serve, conduct new airfield and aircraft support studies and accomplish strategic planning, publication and strategic planning. Publication before the unified military arm and the Navy would assist, but there would be of vastly lesser dimensions, the committee said. Dr. Herbert F. York, Defense Department director of research and engineering, said no results that work is now under way toward defining the roles and missions of the three services in order to ease inter-service friction.

• **Sen. Glenn's** (D-N.H.) a member of the Senate Armed Services Committee, headed a demands for reorganization earlier in a Senate speech proposing combination of service organizations and reorganization of the Defense Department on the basis of func-

tions and missions as an "absolute prerequisite" to meeting the challenge of random nuclear attack and the present basic difficulty in meeting the Soviet threat. The committee's proposal had been changed last week to include (see p. 31) similar legislation to strengthen defense production and the national defense program that supports the military. Unification effort organization is essential if the U.S. is to survive in the space age.

• **Sen. St. R. Barlett** (D-Alaska), Strategic Strengths (D-Va.) and John Stennis (D-Miss.), all members of the Armed Services Committee, as well as Sen. Joseph S. Clark (D-Pa.) and Sen. Thomas C. Hennings (D-Minn.) supported Eagle's recommendations and urged full consideration of his proposal.

• **Sen. John Sherman Cooper** (R-Ky.), a former member of the Armed Services Committee, called upon the President to re-structure studies to take permanent charge of efforts to reorganize the Defense Department. He urged the President to establish a panel of Defense Department, Eagle said, to determine the best way to consolidate the studies and to make the study would be made later.

• **Admiral** the present organizational structure of the Defense Department, eliminating the designations of Air Force, Army, Navy and Marine Corps and reorganizing on the basis of functions and missions which would include at least a continental air defense, a boosted air force, a environmental defense and a logistics command.

• **Central** combination of all problems involved in the merger of the armed forces. The range of difficulties to be considered, Eagle said, is enormous, and the steps to be taken should be determined on a priority basis to prevent confusion from developing in the sensitive period.



Martin Bullpup to Undergo Further Development

Martin Bullpup as-to-order missile, shown here along under the wing of a North American F-100, will undergo further development at Martin's Orlando Division under a \$1 million Air Force contract. Missiles will have atomic warheads (AVW) (14, p. 21) and is intended for close-in support by Tactical Air Command. Strategic Air Command will order four 40-spark Mark 13s

AVIATION WEEK, September 7, 1959

French Drop Long-Range Bomber Program

Paris—*de Gaulle's* plan to develop a long-range bomber state force, with nuclear weapon capability, reportedly has been dropped because of heavy financial costs involved.

Admirals and civilian sources here claim the government has abandoned its project, announced earlier this year, of developing a larger version of its Mirage 4 attack bomber. Aircraft is to be powered by two Fiat & Whitton 275 turbolifts built in France under license to Sud. The large bomber was slated to be operational by 1966 at which time the French had hoped they would be capable of using it with French made nuclear weapons.

Decision to drop the heavier project reportedly was announced as mid-August at De Gaulle's official assessment but not been made. The French 1959 budget presently is under discussion and Finance Minister Antoine Pinay is determined to meet demands of the French aircraft industry for additional funds to fight an Algiers-based rebellion. The aircraft, which is a French answer to America's B-52, was to be built by Sud in a French aircraft plant in Paris. For the time being, however, *de Gaulle* personally wants the military to develop its own independent delivery system. The military appears to have decided to put American solution directly first.

Reported sources reflect what some military sources claim is a "sense of security" surrounding the current French situation. However, the French are pushing ahead with an independent nuclear weapons program and on the other hand are intensive about their efforts to develop and finance an independent delivery system. Some observers say that in the end the French will have to realize their pride and attempt to make a deal with the U.S. for either an aircraft or missile delivery system.

Current version of the *De Gaulle* 4-bomber weighs about 80,000 lb and is powered by two SNECMA At 8 turbofan engines. Range is under 1,000 mi. French had planned to develop the *Mirage 4* to a range of 2,000 mi with approximately 33,000 lb and to be powered by two Fiat & Whitton 275 turbolifts. The version with greatly increased range capability was to have been France's strategic bomber. About 100 to 120 *Mirage 4* were slated to be ordered.

Admiral Jean R. de Witte, who signed a business agreement (AWF June 9 p. 20) with the French government to build the *CF-104* in France, credits the French program to *de Gaulle* who took over a 100% interest in the French company as part of the deal. Now, however, significance of the agreement is watered down, although *Sud* will maintain and maintain 10% in Europe.

• **Partial** consolidation of the missile and space programs in eliminate the duplication of military and civilian space activities. Removal of the services from the satellite business and re-organization of a military application division within the National Aeronautics and Space Administration to look after military interests. NASA would be forced to hand over development except in areas where an military booster could fit as needs.

• **Abolition** of the Advanced Research Projects Agency and transfer of its research activities to the Director of Defense Research and Engineering. ARPA acts as a 40% wheel in the space and missile acquisition for and, developing the operating functions of the services.

Eagle said that a study of the space and missile program indicates that there is no legal basis for completely separating those NASA was established to place emphasis on civilian and peaceful uses of outer space. He said, noting that the war was understood that the Defense Department is a major civilian leadership and that the *Ramsey* joint bill has been mentioned about the military operation of space programs."

over to the military for its particular type of acquisition. While NASA needs a booster, they should take advantage of what the military has to offer, either by existing hardware or to have been acquired from developing market for weapons. If the military hasn't something to offer, then NASA can develop its own booster."

With three of four essential problems involved in going to reorganizing and re-arranging how outer space—program guidance and reentry—along with dropping between the civilian and military agencies, the *Eagle* said, the two agencies should work closer together. The reason he believes a merger of space and planetary divisions in NASA, he said, is to see that this coordination does occur and that duplication of work and development of hardware is avoided in the top echelons of the Defense Department and through the operating arms.

Eagle also emphasized the time required to reach decisions. "At the top levels of decisionmaking," he said, "we had a proliferation of committees. The NASA has created a Space Council and it also set up a civilian-military liaison committee to coordinate space activities. NASA will be 100% reorganized, advance communication on needs military services and civilian space. There are 14 working groups and one committee in the Defense Department on which NASA staff members serve. To complete the peripheral completed and expand both NASA and agencies of the Defense Department give assignments to research and development units of the military services."

"An awful upper invisible," he said, "depends more on the priorities and overall control of certain persons, and the solutions are above committees which will go no one and cause further delay."

Eagle said the problems of space and missile field alone, that the same truth is the re-organizing process appear to be development of all an weapon system.

Non-Profit Status Proposed for STL

Washington—Space Technology Laboratories, a wholly-owned subsidiary of Thompson Ramo Wooldridge, "must be converted into a non-profit institution" if it is to continue as technical manager of Air Force ballistic missile programs, the House Government Operations Committee was told last week in a committee report leaving missile programs and problems into the end of World War II.

"An unhealthy situation has developed," Government and private business rulers have become submerged to the detriment of both, and that is increasing concern on the part of Congress and the public over the career paths and position of STL.

"The best step the committee and should be a complete division of STL in Thompson Ramo Wooldridge.

"If voluntary arrangements for non-profit status cannot be worked out, the alternative to further possible relationships is a reversion of the Air Force comprising the according to the committee, STL would have to go the way of all other contractors that compete in the market for its business."

Moss Asks McElroy to Explain Why Gen. Power Book Was Banned

Washington-House Committee investigating Communists asked Defense Secretary Neil McElroy last week to explain why he banned publication of "Design for Survival," a book written by Gen. Thomas S. Power, commander of Strategic Air Command (AW Aug. 20, p. 291).

In a letter to McElroy, Subcommittee Chairman John E. Moss (D-Calif.) requested an immediate and complete explanation of the circumstances involved in revoking the book and the action he took in prohibiting its publication. Sen. Stuart Symington (D-N.J.) also censured the Defense Department for "Design for Survival."

Power was denied permission to publish the book under a Defense Department policy which bars top civilian and military defense officials from writing about their offices or commands while still in those posts. The Department and its disappears apply only to a copyrighted book and that Power is free to express his views through such means as speeches and interviews.

Moss said he understood that the Power book had been approved and he gained a memorandum from former USAF Under Secretary Malvino A. MacLean which said off the record in "Design for Survival" to keep open material available to the press and avoid an implied public foot in closed congressional hearings. He said much of the material was in speeches made by Power and other top officials and military leaders.

Noting that the spokesman in the memorandum was Power and shouldn't be accepted as official Defense Department policy, Moss said: "It is my opinion that Air Force officials, MacLean and Air Force officials of the USAF, are entitled to express their views and beliefs in a publication to assist in a contribution to serious, serious thought and literature. This is in accord with past Department of Defense policy and instructions to this author."

Subcommittee's investigation determined that the manuscript went to Defense Department Office of Security Review on April 23 after it had been revised in Air Force headquarters. Air Force approval after recommended changes came late in June from the Assistant Chief of Staff for Guided Missiles, USAF headquarters, and the deputy chief of staff for nuclear, space and programs and operations and strategic plans.

The manuscript was returned to the Air Force by Major General Arnold

Sherrill, responsible for the Air Force's nuclear weapons policy. It was referred to Sherrill July 2, accompanied by the MacLean memorandum. After further review from Sherrill's office, the manuscript was forwarded to Air Force Secretary James H. Doolittle, and the manuscript was submitted again for Defense Department approval.

It was denied. Outlining this sequence of events, Moss said: "The investigation indicated that the document was found in DDCI 13109, a checklist which frequenters set up to receive a direct communication channel for receiving information. This was intended to August, 1957, to inquire that 'established policies or programs of the Department of Defense or those of the national government.'

A second basis for refusal was the policy professed by a meeting in 1954 between former Defense Secretary Charles E. Wilson and the service secretaries, which controls writing of books and magazine articles by top defense officials. MacLean and Defense Department officials affecting this policy has never been put on writing.

Now said McElroy that whether or not there is agreement with the ideas expressed in "Design for Survival," "it

not keeping the program alive and presenting the issues ahead is expensive from going to sleep."

Rep. John E. Moss (D-Calif.) told another chairman who noted it had been approximately two years since Spatz and I had been involved in the USAF withdrawal from aircraft in missiles, added, "I had talked to Gen. Sherrill, in this summer, to determine that there was no longer any requirement for high energy fuel." "But a prompt decision hasn't made after Spatz's," he said would be the latter part of \$200 million," Brack said.

MacLean had the testimony of either Air Force and Navy witnesses who said that the two services no longer have a requirement for the high energy fuel. But early stages have not been conducted under the Air Force's plan to return the improved performance, fuel and lower cost expected. "At Aug. 31," p. 39.

MacLean said the first estimate of the improved performance of liquid fuels over conventional ranged upward

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First Photo of Martin RB-57D

First official photo of Martin's Air Command's RB-57D high-altitude reconnaissance plane shows the major redesign necessary to develop the aircraft from the original Martin RB-57A three-place nuclear loader used by the Tasked Air Command. Most obvious alterations include repositioning of Pratt & Whitney J57 turbojet engines developing 10,500 lb thrust each and a large increase in wing area accomplished by changes in the aileron aerofoils. The high-altitude aircraft does not require extra protection used on the wing of the RB-57A. Design load factor of the RB-57D is much lower than that of its low-altitude predecessor, giving it a very low structural weight. This feature plus the added wing area and improved engines is the key to its altitude capability. Aircraft's overall weight is a tribute for the J57. Bomber version is powered by two 7,000 lb thrust Curtiss-Wright J35 engines.

from 50%. He added, however, that the most recent studies show that no present aircraft is acceptable at subsequent cost savings and moderate aircraft improvements.

In addition, he said the fuel cost has not been reduced to the point expected in 1956, as was anticipated. In the meantime, he said, the cost from the present cost of \$1 a pound would be prohibitive at a moderate level of production. MacLean said, "The estimate for the two to six aircraft plants is around \$1 a pound, but with improved procurement and larger scale production possibly bringing the cost to below \$2 a pound."

Further, however, Dr. D. W. Schreiber, Collier-Chemical Corp. vice president, testified that he regarded the boron fuel program as neither a future nor a sensible.

Schreiber, who learned the program as a participant and test witness, said that the Air Force's requirements no longer exist for the J57-5 engines, liquid fuel still retains more energy than conventional fuels and that it appears practical for

jet engines and promising in missile propulsion programs.

Schreiber and other orbital proponents are likely to develop fast aircraft or missiles utilizing boron and magnet engines that can heat to incandescence. The majority of the Air Force and Navy fuel programs have started off at a country of various programs at the university level. In number of aircraft, which are likely to remain in service many decades, he said.

Because of possible future uses of boron, Dr. Schreiber suggested the Martin plant be used for atomic production of the body of a nuclear capsule. It is also possible, he said, that the non-nuclear portion of the plane, consisting of administrative buildings, storage areas, and water tanks could be utilized in the production of other military or industrial chemicals.

"If the termination order is effective in its original form," Schreiber testified, "it will be a shock not blis" to Collier whose efforts have been directed almost exclusively to the boron fuel program. Future use of either or both of the

two plants will depend to a large extent upon an engineering study being conducted by Dr. Lester S. B. of Martin. Results of the study will be submitted to a meeting of Defense Department's Joint Working Group on Special Funds on Sept. 10, which in turn will make its recommendations to the like of the plants to Defense.

News Digest

North American B-52. North American will fly downwind on flight to static display, and athletes at high speed. Boeing Airplane Co., sub-contractor for the delta wing, awarded Gorrie-Wright's Propeller Division a contract for azimuth for the folding mechanism.

First tactically operational model of the Mark 2 Convair B-58. Bomber is scheduled to make its first flight of Convair's West, Tex., on Sept. 10, marking the start of delivery to USAF of eight-tenths B-58s.

Pan American World Airways last week arrived a transatlantic strike by its flight engineers by concluding an agreement covering union jet crew base rates. The agreement specifies that the third officer will not be used in any flight engineer functions on the aircraft. Flight engineers had complained that their options were limited by the third officer's use of single flight engineer ratings and causing "confusion in the cockpit."

General Electric Co's Small Aircraft Engine Department received its first order for CT55-100 turboshaft engine with 1,600 shp. It is a 500-hp derivative of the S-61 and S-62 turboshafts.

Mac. Gen. John W. Shadrick, Jr., recently appointed chief of Air Research and Development Command, has been named board chairman of General Rocket Co., succeeding Jim J. Kinnear, vice president of Tennessee Gas Transmission Co., which has no longer in the firm.

Avco Corp's Research and Advanced Development Division will do basic research and develop prototypes for the reentry capsule of the Minuteman solid fuel intercontinental ballistic missile (AW June 3, p. 39); order a \$16,650,000 Air Force contract.

Two white noise are being utilized in a sealed glass and plastic can by Gulton-Vought scientists, in a test of a closed ecological system that could apply to future space exploration.

Military Requirement Demanded To Save Boron Fuel Investment

Washington—Members of the House Science and Space Committee had voted to accept the Defense Department's proposal to "temporarily" ban the use of boron high energy fuel in order to prevent losses already incurred in getting the program started.

Rep. James Fulmer (D-Tenn.) told John H. Matlack, engineer director of defense research and engineering, "No one here wants to produce a fuel for which there is no requirement. What we want is for you to come up with a requirement and promptly."

Matlack appeared before the committee to explain the reasons behind recent cancellation of Air Force and Navy liquid fuel programs which resulted in the closing of two highly constructed fuel plants.

Matlack had the testimony of either Air Force and Navy witnesses who said that the two services no longer have a requirement for the high energy fuel. But early stages have not been conducted under the Air Force's plan to return the improved performance, fuel and lower cost expected. "At Aug. 31," p. 39.

Matlack said the first estimate of the improved performance of liquid fuels over conventional ranged upward

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AIR TRANSPORT



EJECTORS which are part of Douglas DC-8 would suppress smoke or exhaust on the Delta Air Lines transport in traffic pattern. Ejector can sound and increase takeoff thrust to other less critical in fatigue dust type nozzle (AW Nov. 17, p. 91).

FAA Presents DC-8 Type Certificate

United, Delta plan to begin service on Sept. 18; model with JT4 scheduled for December approval.

By L. L. Doty

Baltimore, Md.—Federal Aviation Agency last week formally presented Douglas Aircraft Co. with a type certificate for the DC-8 transport powered by four Pratt & Whitney JT3 turboprop engines at ceremonies at Baltimore Airport to clear the way for the simultaneous entry of United and Delta Air Lines into U.S. jet competition on Sept. 18.

United Air Lines, which has been forced to juggle schedules to meet Boeing 707 competition by American Airlines and Trans World Airlines, to set schedules so that pilots could be withdrawn from service for jet training, will enter the competition a week with dark, nonstop round trip flight between San Francisco and New York on Sept. 18.

Delta, which flies but has had no track to track jet competition on any of its routes will launch its DC-8 service on the same day with one round trip flight between New York and Atlanta on Oct. 15. The carrier will expand its routes to include turboprop flights to Atlanta, Chicago, and Atlanta and between Atlanta and Miami.

The Delta moves into the jet race well ahead of its principal competitor, Eastern Air Lines, which chose to wait for delivery of its first of 16 DC-8 until the aircraft powered with larger P&W JT4 turboprops are available as early as next fall, conversion com-

plete service of the first of the con-

Of the 101 DC-8s on order, 24 are planned with the smaller JT3 engines. C. E. Wherry, Delta president, told *Airways* Wednesday that his company ordered the six DC-8s with the JT3 engines in order to avoid any unnecessary delay in beginning service. He said the company plans to convert the aircraft to the larger powerplants or to withdraw it at a later time.

Conversion Plans

United President W. A. Patterson also said his company plans to convert all 35 DC-8s equipped with JT3 engines to either JT8d or JT4s after three or four years of service. United has a total of 46 DC-8s in order at a total of \$225 million.

Patterson has often acknowledged the risk involved in having the DC-8 in preference to turboprop transports in world-wide markets. He believes just United at a competitive disadvantage. However, he once noted that the long-term advantage of the DC-8 would outweigh the temporary disadvantage and that air, aeronautical traffic would be regulated quickly when DC-8 jet transport service begins.

Last week, he enlarged upon these "long-term" advantages during formal presentation here of type certification to



ANNUAL view of three DC-8 jet transports in formation, two are in Douglas markings and the third in United's. The aircraft flew 2,234 hr in Douglas flight tests prior to last week's certification and made 1,782 landings during the test phase.



DELTA DC-8 flew from the Douglas Aircraft plant at Long Beach, Calif., to Mount, Fla., in 4 hr, 45 min. Configuration is for 115 passengers, including seven seated in the lounge.

SIDE VIEW of United DC-8 emphasizes option of extended position. Unit has drop-down doors which can be closed for freight revenue when doing loadings. Shown is powered by four Pratt & Whitney JT4 engines rated at 11,000 lb thrust each.



707 Crash Prompts Restudy of Training

Revere, N. Y.—Reevaluation of training requirements with two-engine aircraft approaches will result from survivors of the Aug. 15 fatal crash of an American Airlines Boeing 707-120 at the Newark, N. J., airport, according to the Federal Aviation Administration's Learning Board. (AVW Aug. 30, p. 37)

According to testimony of a Civil Aeronautics Board hearing here on the accident, most survivors and the air craft, which had been cleared to land on Runway 21 at the Commercial operated field, landed left, nose-up, and then careered a right turn which became progressively steeper with the plane went almost vertically down.

The student pilots claimed the gear was in the up position of their two-engine instruments, which would provide erroneous indications that sometime a planned stabilizer condition, an incomplete checklist, or an additional emergency landing.

Following the accident, American Airlines suspended two-engine jet approaches, except under certain restrictions, the second engine was not to be cut back until the aircraft was going straight on its final landing. Federal Aviation Agency later directed that "all maneuvers involving simulated failure of two engines in one mode be performed 'at altitude' pending results of the crash investigation."

Measures Required

Four to five days ago, 26 directors of the simulated two-engine approach at the airline were requested for input when checks on approach to nonstop, nonstop, and/or other aircraft in all from engine officials.

The indications that the 707-120 involved in the accident was maneuvering with its two right engines off, was provided by readings of its rate of turn, turn rate, which showed indications at impact of 185 deg/s for engines No. 3 and 2 compared with 70 deg and 74 deg, respectively, for engines No. 4 and 3.

Development of information for a reevaluation of the training requirements began during the last month, when the two-engine aspect of a two-engine approach was the subject of a informal meeting of the Board in the fall, as a result of a hearing on the three-group findings.

Seven 707 pilots testified during the hearing as to operating characteristics of the plane under certain flight conditions and on controllers' decisions used in the training program. During their testimony, each was asked whether he felt aware of approaches during two-engine-out maneuvers. J. B. Ginn, Boeing senior test pilot and team

ing pilot, Cillian H. Brant, American Airlines 707-120 captain, and Capt. U. M. Morris, American Airlines 707-120 captain, agreed that they did not appreciate the significance of the maneuver until they had to take over. One member mentioned a 3,500-ft altitude loss, another a 1,000-ft loss and a third a 5,000-ft loss, Ginn said.

David Radle, CAB Bureau of Safety director and a member of the board of inquiry in the hearing developed this line of questioning. He and later that considerably additional information on the subject it will be accumulated and the details of such information will be carefully re-evaluated.

Ginn of Boeing described flight into the wind conditions had to wait since the aircraft was holding the approach holding use of air heading and lateral control simultaneously with reduced speeds of maneuvering to planned stabilizer condition, which would not allow the aircraft to turn. The aircraft left and right with full control applied to obtain flight condition as rapid response to turn right. Power was compensated during these rapid maneuvers.

Ginnell reported an experience during a training flight in which he was turning downwind after takeoff and setting up for a two-engine landing. He had gradually used back, on two engines, as the student applied rudder left and right. The student then applied a full left rudder to the plane, began to yaw and roll 60-70 deg, lost the power on engine. Ginnell took off, applied full power and brought the aircraft back.

According to the Boeing pilot, two

other airline operators of the 707-120 have experienced similar conditions. The two others mentioned were the other two which had to take over. One member mentioned a 3,500-ft altitude loss, another a 1,000-ft loss and a third a 5,000-ft loss, Ginnell said.

From the stabilizer setting of the involved plane, Ginnell said it is unlikely that a planned stabilizer approach was being made.

Capt. William A. Bernholz, supervisor of flying for American Airlines, testified that the airline had no results from tests to determine how long it takes the airplane to recover from reduced roll. At 170 ft, he reported power on engines No. 1 and 2, plus right rudder, left aileron, to maintain straight nose dive to roll from 10 deg left to 30 deg right was 10 sec. Capt. Bernholz said. The nose then started down.

Emergency Action

Capt. Bernholz agreed with Ginnell that course action to avoid other traffic should not have caused the jet to roll in during the approach before the accident. This possibility was raised by testimony of several witnesses who had noticed a lightplane in the vicinity of the time and for the testimony of Sgt. John D. Mahoney, a Suffolk County 911 emergency plan and participant of a Fig. 7-10.

Sgt. Mahoney said that just flying the roll and when he got at 300 ft, operating out of a farmer's field across. He had been flying out of the field for about two months. In fact, The field had not been inspected by AIAA, it was on a stream bed, and he had an agreement with Mahoney's father about inspecting in the vicinity of its pasture. The Curb had no rights.

He first sighted the jet, Sgt. Mahoney testified, when it was about 600 ft above and approaching at a perpendicular crosswind of about 30-35 mph. The jet turned left and then its right wing went down and the nose went down. It rolled out back and let that run, but Mahoney said.

He was aware when I first saw him but didn't let him, went up a hill and waited to get out of there," the witness testified.

Third, Capt. Brant, who had been flying out of the 16 DC-9s now used by the Board, testified with TWA includes engines. No action has yet been taken on the recommendations because, and no comment has been signed with Pratt & Whitney for the new powerplants.

Survived Capt. American Airlines at time, Capt. U. M. Morris right away and some of his questions were raised

out of order by Claude M. Schenckinger, CAB hearing officer. One question was whether the aircraft was familiar with Civil Air Regulations. Schenckinger was asked that outside the scope of the investigation.

Information data from the structure group introduced at the hearing indicated that the American plane, for the given approach angle of about 75 deg, on a 215 ft per sec rate of heading, positive at impact was about 15 deg nose down attitude, varied slightly in the roll and slightly right-elevation. Landing gear and 90 deg of flap were extended at impact and there were 10 units of airplane nose up. At impact point, right wing had made the first roll, reaching maximum, the stabilizer trim switch on the cockpit's roll indicator 1.75 deg nose down in the pilot's side, the stabilizer trim switch reading was full deflection nose down.

Speed brake handle was in an eight degree position, indicating greater up-right pitch up.

The report noted an eight second descent experienced with the plane in the air before the accident with an other crew under Capt. C. H. Radlack. According to Capt. Radlack's statements, he act up a planned stabilizer roll, 15 deg, nose down while descending to enter the descent pattern. The captain used the stabilizer pilot to decrease a planned stabilizer trim to the 1.75 deg position.

American Wins Nonstop Rights

Washington—Civil Aviation Board last week affirmed nonstop rights between San Francisco and New York for American Airlines on grounds that the traffic pattern off the market and the remaining effects of jet aviation in the development of new traffic warrant a third carrier on the route.

This is the first time that the Board has had a some decision about safety as the influence of new equipment on safety potential. In this case the inauguration of trans-Pacific nonstop service has been the main factor. To this decision, only United Air Lines and Trans World Airlines have been able to provide nonstop service between the two cities. American will start the service Nov. 1.

Northwest Airlines was an unsuccessful contender on grounds that American had already established shortly off the market which can be readily assumed to stimulate the new nonstop service.

Board Chairman James Dorsey and member Herman Denby took sharp issue with the company's argument which estimated that round-trip traffic growth in the market during the next three years will amount to 35%, with an additional 10% in effect jet stimulation in 1968.

In their strongly worded 25 page decision, Dorsey and Denby said "The need is not ripe for a Board decision" and outlined the majority action on the following grounds:

- Recent motions on evaluation of systematic or operational impact of jet
- Public need for added competition over the route was not proven.
- Public interest favored by the Board is insufficient to support these services.
- Addition of a third carrier to the market will cause heavy revenue diversion from TWA and UAL.

In its opinion, the majority found that just service was provided by United and TWA did not fully meet the needs of the traveling public and they added.

"The evidence clearly shows that during and prior to 1967 it was difficult for the travel to obtain by choice of schedule or departure time on nonstop coach flights during peak periods."

The majority observed that plane to complete a full schedule pattern of jet nonstop service will cause a substantial amount of additional capacity in the New York-San Francisco market. However, they noted that the market potential which exists will be "substantially enhanced by the unique advantages of jet aircraft" and that the "authorization of a third carrier holds the greatest prospect of the full development of that potential."

The majority was enthusiastically optimistic over the prospects for traffic growth in a statement that was almost a direct reply to changes in the majority of trans-Pacific nonstop was too strong on most major routes, the majority concluded.

"Despite the addition of a substantial amount of new competitive service to nonstop markets during the past several years, the aviation industry has continued to grow and prosper and the number of passengers being transported . . . has increased year by year." They forecast a confirmation of that trend.

splitiquer method. Although max 1,000 ft, and average was 100 ft. The student properly demonstrated the required splices and started an air test to the left in order to make the field. While applying left aileron, he pulled up the speed brake handle to 30 deg.

Increasing Roll Rate

He pushed in on the rudder to increase the roll rate and the student immediately applied right aileron. Capt. Radlack couldn't determine whether the 45 deg bank was caused by the speed brake handle application. No flap was extended at the time. With no flap, the outward aileron was locked out. In this maneuver, with a nose down condition, it was necessary to disengage the rudder splices and use the outboard speed brake pitch up.

The report noted an eight second descent experienced with the plane in the air before the accident with an other crew under Capt. C. H. Radlack. According to Capt. Radlack's statements, he act up a planned stabilizer roll, 15 deg, nose down while descending to enter the descent pattern. The captain used the stabilizer pilot to decrease a planned stabilizer trim to the 1.75 deg position.

The results, Capt. Radlack said in calling it back to the East the aircraft was disengaged. With the aileron disengaged and the rudder released locked out, the aircraft's lateral control has been reduced 40%. While the student applied opposite aileron, the aircraft stopped its roll to the left. The student then put the speed brake handle full forward, and opposite aileron returned the aircraft to level flight.

Jet Service Supports Soviet Airline Growth

Moscow—Soviet Airlines has introduced an all-new fleet of 100 aircraft, including 45 aircraft in the first half of 1970, according to deputy chief V. Radchenko.

The Soviet carrier attributed its gains in large measure to the introduction of 747-200 passenger twin-turboprop Tu-154B transports and 30-passenger four-engine Il-62 intercity transports into scheduled service last April. New Il-62 long-haul transports will not have an impact on Aeroflot's passenger traffic until the latter half of the year.

Despite the healthy traffic increase, Aeroflot's system-wide gains in terms of additional passengers and revenue increased with the flight of 155 aircraft in 1969, more than half that of the U.S. nonstop industry. It is estimated that a 42% increase for all 1969 would represent less than 5.8 million more passengers for Aeroflot, where a 10% gain for U.S. carriers would result in 5 million additional passengers.

Significantly, even the large percentage gains that Aeroflot has been experiencing on most routes are beginning to taper off. In 1957, the Soviets averaged a 6.9% traffic increase over 1956. Last year, the gain was 5.8%, and it now appears that this year's percentage increase will drop further.